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REMARKS

Claims 9-13 remain withdrawn from examination in the present application. Thus, Claims 1-8 are presented for reconsideration in view of the amendment to claim 1 and the discussion to follow.

Claim 1 has been amended to recite that the composition is a rotolining composition (p. 4, l. 8-11) instead of a composition used for rotolining. Claim 1 has also been amended to recite that the composition is dry so as to distinguish better from the aqueous dispersion composition of Honda et al. (Honda). The compositions used in the Examples are dry in that they are dry mixed together and the resultant mixture is added to the mold for rotolining (p. 10, l. 2-6). The specification discloses an agglomeration process for obtaining the copolymer particles, which involves forming a gel of an aqueous dispersion of the copolymer, followed by agitating the gel in the presence of a water immiscible liquid, followed by drying the resultant granules and possibly heat hardening the resultant granules by heating to a temperature below the melting point of the copolymer (p. 4, l. 16-29). Such granules are dry as are the particles formed by extrusion/cutting of the copolymer (p. 5, l. 5-10). Claim 1 has also been amended to recite the large particle size of the copolymer particles as disclosed on p. 4, l. 35-37. The particle size of the copolymer in the aqueous dispersion is quite small, about 0.2 μm as disclosed on p. 5, l. 3-5), this being the primary particle size. One skilled in the art knows that the particle size of the copolymer in the aqueous dispersion must be so small so as to remain dispersed in the aqueous medium. The particles obtained by agglomerating process to form granules or by extrusion/cutting of the copolymer form secondary particles much larger (100-3000 μm) than the primary copolymer particles.

Honda does not disclose the following features recited in claim 1.

- a. a rotolining composition
- b. that the composition is dry
- c. melt flowable TFE/PEVE copolymer particles of such large size as now recited in claim 1,
- d. adhesion promoting, non-bubble promoting metal powder, and
- e. the use of a particular fluoropolymer, TFE/PEVE as the rotolining fluoropolymer.

The recitation of "rotolining" and "dry" in the claim preamble are intended to and do limit the scope of the claim. Adhesion promotion as required for the metal powder, can only be obtained by the rotolining use of the composition, which is why the composition is now called rotolining composition. Recitation of the composition as being dry means that there is no liquid medium present, enabling the composition to be a rotolining composition. Rotalining involves the adding of the rotolining composition to the heated rotating mold, the heating causing the copolymer particles to melt and the rotation of the mold converting these molten particles into a continuous coating (lining) on the interior of the mold (p. 3, l. 28-35). Liquid, such as an aqueous polymerization medium, is not used in a rotolining composition, because

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the volatility of any liquid such as water would result in bubbles being formed in the lining. The recitation of "melt flowable" in the claim preamble of course defines the TFE/PEVE copolymer in the claim by making this copolymer be melt flowable, thereby enabling the entire composition to be melt flowable.

The coating composition in Honda is a dispersion of polymer in liquid medium containing a surfactant (col. 2, l. 19-24). Although presented as "one aspect of the invention" (col. 2, l. 20), this is the only form of the coating composition disclosed. As one skilled in the art knows, the purpose of the surfactant is to keep the polymer particles dispersed in the liquid medium. A number of liquid mediums are disclosed (col. 3, l. 38-42). Solid additives may be added to the liquid medium (col. 3, l. 43-47). Aqueous dispersions of polymer are used in the Examples and applied to a fixing heater roller, i.e. its outer surface, which is then tested in a copying machine (Examples 1 and 2 and Experiments 1 and 2. The remaining Examples apply the aqueous dispersion of polymer to frying pan surfaces, which are then tested for wear resistance and non-stick cooking cycles. It is apparent from Honda that the coating composition is a liquid coating composition and therefore is not dry as now required by claim 1. It is also apparent that Honda does not disclose rotolining as a utility for his composition, and that such composition because it is in liquid form could not be used for rotolining.

The particle size of the Honda polymer is dictated by its use as a dispersion in a liquid medium, which means that the polymer particle size must be quite small. The "about 0.2 μm " disclosed in the present specification (p. 5, l. 5) is in substantial agreement with the particle size range of 0.1 to 0.5 μm disclosed in col. 2, l. 55-57, and claim 9 of Honda. One skilled in the art knows that application of the coating in liquid form to the substrate to be coated as in Honda merely piles the primary particles on top of one another to give the thickness desired and does not give agglomerates such as formed by solvent-aided pelletization. Thus, the coating thicknesses disclosed in the Honda Examples are only 30 μm thick (p. 4, l. 56, col. 6, l. 2). Honda does not disclose or suggest the relatively large particle sizes of about 100 to 3000 μm now recited in claim 1.

The tetrafluoroethylene base polymer is considered by the Examiner to be melt flowable because it can contain comonomer, apparently relying on the disclosure in Fluoroplastics that "Copolymers with extensive comonomer contents are handled by melt-processing methods." (p. 1, bottom of left column). Just before this quoted statement in Fluoroplastics is the statement "Copolymers of trace amounts of other perfluorinated monomers with TFE known as modified PTFE are covered by this book because they are processed by the same techniques." Immediately preceding this quoted statement is the disclosure that the TFE polymers cannot be processed by melt processing techniques because of their high melt viscosity. Thus, Fluoroplastics presents the reason why copolymers with extensive comonomer contents are not treated in Vol. 1 of the series of books, while modified PTFE is treated in the same Vol.1 as PTFE homopolymer.

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The TFE base polymer of Honda, when it is not homopolymer, is modified PTFE that is not melt flowable, just as PTFE is not melt flowable. This is seen from the small amount of comonomer that is disclosed in Honda (less than 1 wt%, preferably less than 0.5 wt%, col. 2, l. 46-47). This is also seen from the molecular weight of at least 5,000,000 desired for the TFE base polymer regardless whether homopolymer or containing the small amount of comonomer (col. 2, l. 43-46). Such high molecular weight provides a polymer that does not flow in the molten state, i.e. is not melt flowable. The non-melt flowability of the TFE base polymer of Honda is seen by the determination of specific gravity (S.G.) disclosed in Honda, including removal of the compressed sample from the mold and heating it in air at 380°C for 30 min (col. 3, l. 12-22). The sample can be heated outside the mold, i.e. can be free-standing during heating above the melting temperature of the polymer, because the sample does not flow in the molten state achieved by the heating.

It is noted that Honda discloses that up to 30 wt% PFA can be present with the TFE base polymer, which is nevertheless applied in the coating operation from a liquid medium (col. 4, l. 11-25). This disclosure of PFA is not a disclosure of TFE/PEVE copolymer. Example 1 in the present specification compares adhesion when 0.5 wt% zinc powder is incorporated into TFE/PPVE copolymer and TFE/PEVE copolymer. Surprisingly, the adhesion is much better when the fluoropolymer is the TFE/PEVE copolymer of claim 1.

One skilled in the art faced with the problem of TFE/PEVE copolymer not forming an adherent rotolining, is not led to the addition of certain metal powder, namely those that produce adhesion, by the disclosure in Honda that metal such as silver and aluminum impart conductivity to the Honda coating composition and that metal powder can be an antiwear additive. Honda is interested in wear resistance, which involves a test using a rotating brush that peels strips of the coating from the substrate (col. 6, l. 5-24). Honda gives no hint that certain metal powders would increase peel resistance and thus increase wear resistance. The aluminum disclosed in Honda for imparting conductivity to the Honda coating composition, causes bubbles during rotolining (p. 6, l. 26-28).

The rejection based on Honda also relies on Kawasaki et al. (Kawasaki) to complete the obviousness rejection, the reliance on Kawasaki being explained in the Office Action dated August 23, 2006. In that Office Action, Kowasaki is stated to disclose fluoropolymer-coated rollers, similar to Honda, and that they may contain conductive metal particles such as zinc and copper (col. 7, l. 25), it being alleged that it would be obvious to use the Kawasaki metal powders in the Honda. The disclosure of additives in Kawasaki is as additives in the elastic layer 3. There is no disclosure of any metal additive in the fluororesin layer 4. The fluororesin layer 4 can contain a secondary component that has a high coefficient of dynamic friction (col. 5, l. 60-64). Various polymers are disclosed as secondary additives in Kawasaki ((paragraph bridging cols. 5 and 6), none of which are metal powders. Kawasaki does disclose that a conductive agent such as carbon black can be used in the fluororesin layer (col.

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8, l. 12-16), this being the preferred conductivity additive for the elastic layer (col. 7, l. 32-33).

The fluororesin layer in Kawasaki is applied to the elastic layer of the pressure roller as a sleeve made of the fluororesin (col. 2, l. 23-24). The fluororesin sleeve is glued to the elastic layer by using a vulcanizable adhesive between the elastic layer and the fluororesin sleeve (col. 8, l. 17-25). The fluororesin sleeve is pre-treated to accept the adhesive (col. 8, l. 26-40). There is no hint in Kawasaki that certain metals added to the fluororesin sleeve would provide adhesion in the different utility, namely rotolining.

Kawasaki does not fill in the many gaps between the Honda teaching and the invention of claim 1. Kawasaki does not disclose or suggest rotolining. Kawasaki has a fluororesin sleeve, which is dry, but which has no particle size and therefore supplies no suggestion concerning the particle size difference between the small dispersed polymer particles in Honda and the much larger fluoropolymer particles used in claim 1. The roller in Kawasaki is a pressure roller, wherein the fluororesin sleeve is adhered to an elastic underlayer. In Honda, the coating composition is applied to a primed metal surface of a roll (col. 4, l. 52 and col. 5, l. 61-65)). Kawasaki uses a vulcanizable glue and Honda uses a primer for adhering fluoropolymer to their respective different substrates. No suggestion is derivable from either reference that certain metal powders contained in the fluoropolymer will provide adhesion in the different process, rotolining.

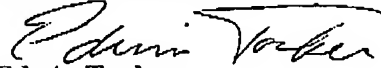
Dependent claims 2-8 are unobvious and therefore patentable on the same basis as claim 1. Claim 3 provides additional patentable subject matter, namely quantifying the preferred small amount of metal powder that is used to obtain adhesion in rotolining. Example 2 of the present specification discloses high adhesion (53 lb/in) when the metal powder content is 1 wt% and the TFE/PEVE copolymer is stabilized, but that this adhesion diminishes as metal powder content is increased, providing adhesion of only 14 lb/in when the metal content reaches 5 wt%. Honda and Kawasaki provide no hint that only small amounts of certain metal powders will provide this adhesion result in any process, much less in rotolining.

In view of the foregoing, allowance of the above-referenced application is respectfully requested. It is also respectfully requested that claims 9-13 be allowed in the present application. A petition for two-month extension of time and payment of the required fee is filed herewith.

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Respectfully submitted,



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Dated: January 16, 2008